

REMARKS

Amendments

Claims 1 and 10 are amended to correct an obvious typographical error. New claim 45 is directed to a further embodiment of the invention. See, e.g., original claim 10.

Rejection under 35 USC 112, first paragraph: Enablement

Claim 1 is rejected under 35 USC 112, first paragraph, on grounds of alleged lack of enablement. This rejection is respectfully traversed.

In the rejection, reference is made to the so-called Wands factors. It is noted that these factors are used to determine whether undue experimentation is involved. See, *In re Wands*, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). However, before the issue of undue experimentation arises, the PTO must present reasons to doubt the veracity of the objective enablement statements presented in an applicants' specification.

In making a lack of enablement rejection, it is the initial burden of the PTO to establish a reason to doubt the truth of the statements presented in the specification concerning enablement. See, e.g., *In re Marzocchi et al.*, 169 USPQ 367, 370 (CCPA 1971). It is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure. In addition, as stated in the *Marzocchi* decision:

“a specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of section 112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support” (emphasis in original).

See *In re Marzocchi*, at 369. See also *In re Brana*, 51 F.3d 1560 (Fed. Cir. 1995). Merely

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asserting a conclusion that the claims are not enabled for “heterocyclic groups” does not set forth reasons or evidence to doubt applicants’ statements of objective enablement.

Thus, all that is required under the statute is objective enablement. In addition, merely because an art is alleged to be unpredictable does not establish non-enablement. See, e.g., *In re Angstadt*, 190 USPQ 214, 219 (CCPA 1976) in which the art involved (catalysis) was acknowledged to be unpredictable, yet the court still found the disclosure in question to be enabling.

Furthermore, asserting that a claim is broad does not provide evidence or reasons to doubt the statements of objective enablement presented in applicants’ specification. Even with respect to determining whether undue experimentation is needed, breadth is but one of the *Wands* factors, not a determinative factor.

The rejection alleges that the terms organic amine derivative, multifunctional polymeric compound and initiator are broader in scope than that disclosed. This is incorrect as these terms are disclosed broadly in applicants’ specification.

The decision in *Marzocchi* is particularly relevant. In *Marzocchi*, the Examiner objected to the term “polyethyleneamine.” The Court noted that the Examiner’s objections indicated a concern over breadth. The Court responded to this concern by stating that:

The only relevant concern of the Patent and Trademark Office under the circumstances should be over the *truth* of the assertion. The first paragraph of §112 requires nothing more than objective enablement. How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance. (*Marzocchi* at 369)

Examples to support every possible amine derivative, multifunctional polymeric compound and initiator are not required for enablement. As stated in *Marzocchi*, “How such a [enablement] teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance.” See also MPEP § 2164.02 which acknowledges that compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, does not turn on whether an example is disclosed.

With respect to the amount of experimentation, applicants note that it is by now well settled law that the test for enablement is not whether any experimentation is needed, but whether

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the amount of experimentation required is undue. See *Angstadt*. Even a considerable amount of experimentation, or complex experimentation, is permissible if it is routine. See, e.g., *Ex parte Jackson*, 217 USPQ 804, 807 (POBA 1982) and *In re Wands*, 8 USPQ 2d 1400, 1404 (Fed. Cir. 1988). In the instant case, using the guidance presented in applicants' disclosure, one of ordinary skill in the art can readily test any given embodiment of the claimed invention using no more than routine experimentation.

The rejection fails to set forth reasons as to why one skilled in the art would doubt the veracity of the statements of objective enablement presented in the specification. Further, the rejection fails to present any rationale as to why making and using the invention would require undue experimentation.

In view of the above remarks, it is respectfully submitted that applicants' disclosure provides more than sufficient guidance to objectively enable one of ordinary skill in the art to make and use the claimed invention with no more than routine experimentation. Withdrawal of the rejection under 35 U.S.C. §112, first paragraph, is respectfully requested.

Rejection under 35 USC 102(b) in view of Toyoshima et al.

Claims 1 and 6 are rejected as allegedly being anticipated in view of Toyoshima et al. (US 2001/0025414). This rejection is respectfully traversed.

To establish anticipation, the rejection must indicate where the asserted anticipatory reference discloses each feature of the rejected claim. See, e.g., *Ex parte Levy*, 17 USPQ2d 1461, 1462 (POBA 1990) [“Moreover, it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference.”].

Toyoshima et al. disclose a multilayered wiring board having holes of a predetermined size and shape (see the abstract). The procedure used in manufacturing the wiring board is illustrated in Figure 1.

The rejection refers to Example 1 of Toyoshima et al. In this example, a core substrate 3 is obtained by etching a copper foil. Then, a photosensitive insulating layer obtained by cationic polymerization is applied as a first insulating layer 1. The first insulating layer 1 is subjected to UV rays through a mask to obtain a first insulating pattern 11. A second insulating layer is then

applied and subjected to heat treatment to diffuse reaction components from the first layer and to provide for a cross linking reaction. The non-cross linked portions are then removed.

As described in paragraph [0099], the second insulating layer is obtained from a second insulating layer solution containing 50 g of methoxymethylolmelamine (Cymel 370), 180 g pure water, 100 g of polyvinylacetal resin, and 15 g of butadiene-acrylonitrile copolymer.

In the rejection argues that in this second insulating layer solution of Toyoshima et al. the methoxymethylolmelamine corresponds to applicants' component A and the polyvinyl alcohol corresponds to component B. It is further asserted that these components make up at least 75% of the total composition.

However, applicants' claim 1 recites that the composition contains at least 75% by weight of component A based on the total weight of components A, B, and C. The total weight of methoxymethylolmelamine and polyvinylacetal resin in the second insulating layer solution in Example 1 of Toyoshima et al. is 150 g and the percentage of methoxymethylolmelamine is 33% (50/150).

The rejection also refers to paragraphs [0066]-[0067] of Toyoshima et al. Paragraph [0066] describes using methoxymethylolmelamine or ethyleneurea as a water-soluble cross-linking agent for polyvinyl acetal acetate, when the latter is used as a water-soluble resin composition. Paragraph [0067], on the other hand, refers to using water-insoluble insulating materials for the second insulating layer, i.e., polymethylsiliceous siloxane, melamine resins, acrylate resins, and epoxy resins.

As can be seen from the above discussion, the rejections to set forth where Toyoshima et al. describes a dielectric layer formed from a composition comprising applicants' components A, B, and optionally C, as recited in claim 1, wherein the composition contains at least 75% by weight of component A based on the total weight of components A, B, and C. Thus, Toyoshima et al. fails to anticipate applicants' claimed invention under 35 USC 102(b). Withdrawal of the rejection is respectfully requested.

Rejection under 35 USC 103(a) in view of Toyoshima et al. or Knudsen et al. in view of Chen et al.

Claims 2-5, 7-17, 21-30, 33, 38-44 are rejected as allegedly being obvious in view of Toyoshima et al. (US 2001/0025414) or Knudsen et al. (US 2002/0176989) in combination with Chen et al. (US 5,330,840). This rejection is respectfully traversed.

In this rejection, the Examiner again refers to Example 1 of Toyoshima et al. As explained above, Toyoshima et al. does not describe a dielectric layer formed from a composition comprising applicants' components A, B, and optionally C, wherein the composition contains at least 75% by weight of component A based on the total weight of components A, B, and C. Nor does Toyoshima et al. suggest such a composition for forming a dielectric layer.

In the rejection, it is asserted that Knudsen et al. disclose the use of cross-linked polyurethane material as a dielectric layer, citing the abstract, paragraph [0031], paragraph [0051], and paragraph [0019]. The abstract of Knudsen et al. describes a dielectric that is composed of a core material positioned between two polymer layers and can be used in a capacitor. These polymer layers are said to "provide structural integrity for the dielectric." Paragraph [0031] refers to a "dielectric laminate" being placed on a substrate. The dielectric laminates are described in paragraph [0028] as having a core dielectric material between two dielectric polymer layers. Paragraph [0049] describes suitable material for the core dielectric material, e.g., "carbon compounds such as diamond, and ceramic materials such as silicon carbide, silica and silica based compositions, including 100% silica layers, amorphous and crystalline, but also doped silica and silica mixed with other oxides."

In paragraph [0051], Knudsen et al. refer to an extremely wide variety of polymeric materials that can be used in the dielectric laminate. Thus, Knudsen et al. disclose that the polymer materials can be:

"polyesters, polystyrene, high impact polystyrene, styrene-butadiene copolymers, impact modified styrene-butadiene copolymer, poly-.alpha.-methyl styrene, styrene acrylonitrile copolymers, acrylonitrile butadiene copolymers, polyisobutylene, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetals, polyacrylonitrile, alky polyacrylates, alky polymethacrylates, polybutadiene,

ethylene vinyl acetate, polyamides, polyimides, polyoxymethylene, polysulfones, polyphenylene sulfide, polyvinyl esters, melamines, vinyl esters, epoxies, polycarbonates, polyurethanes, polyether sulfones, polyacetals, phenolics, polyester carbonate, polyethers, polyethylene terephthalate, polybutylene terephthalate, polyarylates, polyarylene ethers, polyarylene sulfides, polyether ketones, polyethylene, high density polyethylene, polypropylene, and copolymers, grafts, blends, and mixtures thereof.”

It is evident that this is a vast grouping of polymers. It is noted that polyurethanes are included within this extremely broad genus. Yet, the rejection presents no rationale as to why one of ordinary skill in the art would select polyurethanes from this extremely broad genus encompassing a seemingly infinite number of species. More importantly, polysiloxanes are not included with this vast group of polymers. Polysiloxanes will be further discussed below with regards to the disclosure of Chen et al.

In the rejection, it is asserted that paragraph [0019] of Knudsen et al. discloses that the polyurethane base materials can contain ceramics. This is not an accurate description of the disclosure of paragraph [0019]. This paragraph, which relates to the prior art, discloses that dielectric materials include ceramic materials such as metal oxides that can be deposited on a substrate by CCVD or by CACVD.

In the rejection, Knudsen et al. is relied on as a primary reference. Yet, the rejection fails to set forth where Knudsen et al. disclose any of the features of the composition recited in applicants' claims, for example, component A, component B, and optional component C, and a composition that contains at least 75% by weight of component A based on the total weight of components A, B, and C. Thus, it is unclear how the disclosure of Knudsen et al. is being utilized in the rejection.

In the rejection, it is stated that neither Toyoshima et al. nor Knudsen et al. disclose the amine crosslinking agents recited in applicants' claim 2. But, in addition, Toyoshima et al. and Knudsen et al. also fail to disclose or suggest a composition that contains at least 75% by weight of applicants' component A based on the total weight of applicants' components A, B, and C.

Chen et al. disclose a melamine-cured polyurethane coating composition described as being useful for manufacturing toner fusing members. The polyurethane is the polycondensation product of a C₂₋₂₀ diol, a monomeric diisocyanate, and an organopolysiloxane diol having a siloxane backbone, pendant alkyl, vinyl, and/or phenyl groups, and terminal hydroxyalkylene groups. See the disclosure at column 3, lines 4-21.

The coating composition comprises a crosslinked block copolymer product of the polyurethane block copolymer and the melamine resin. As noted in the rejection, Chen et al. disclose that the melamine resins, Cymel-303, Cymel-380, and Cymel-385, can be used as crosslinking agents. The reactive sites on the polyurethane block copolymer for reacting with the melamine crosslinking agents are “predominately hydroxyl groups located on the endcapping diol units.” See column 5, lines 61-64 and column 6, lines 59-63.

Curing of the coating composition is achieved through the use of an acid catalyst such as trifluoroacetic acid. The acid catalyst is used in an amount of 0.001%-1.0% of the solids in the formulation. See column 7, lines 1-6.

Chen et al. disclose forming a coating solution for use in applying the coating composition to a substrate, i.e., a fusing belt. The coating solution contains a solvent like THF, the polyurethane/polysiloxane block copolymer, the melamine resin, and a catalyst for reacting the terminal diol groups of the polyurethane/polysiloxane block copolymer with the reactive sites of the melamine resin. See column 6, lines 55-63.

As noted above, the coating composition contains a melamine resin and a polyurethane/polysiloxane block copolymer that is reacted with the melamine resin. The polyurethane/polysiloxane block copolymer contains a significant amount of siloxane units, due to the use of an organopolysiloxane diol in the manufacture of the block copolymer. As a result of this significant amount siloxane, one skilled in the art would not characterize the block copolymer as a multifunctional organic compound. Compare applicants' component B as recited in claims 1 and 10.

Thus, the coating composition of Chen et al. does not suggest a composition containing components A and B as recited in applicants' claims. Further, since the polyurethane/polysiloxane block copolymer of Chen et al. is not a multifunctional organic

compound, Chen et al. do not suggest a composition that contains at least 75% by weight of applicants' component A based on the total weight of applicants' components A, B, and C.

It is noted that Chen et al. broadly disclose that the amount of melamine resin can be 2-80 wt. %. However, the disclosure clearly suggests using amounts that are much lower than 80 wt. %. For example, 10-40 wt. % is preferred (column 6, lines 6-9). See also the disclosure at column 6, lines 63-67 regarding relative amounts of the polyurethane/polysiloxane block copolymer and the melamine resin. See also the relative amounts of polyurethane/polysiloxane block copolymer and the melamine resin used in Examples 8-9. Additionally, Chen et al. provide no suggestion as to the amount of melamine resins to be used in completely different applications, such as the inventions of Toyoshima et al. and Knudsen et al.

Moreover, the rejection fails to explain why one would modify the devices of the primary reference in light of the disclosure of Chen et al. For example, Chen et al. do not disclose an electronic device comprising at least one dielectric layer formed from the coating composition described by Chen et al. In fact, Chen et al. provide no disclosure regarding the dielectric properties of layers formed from the coating composition, e.g., there is no disclosure of the dielectric constant or resistivity of layers formed from the coating composition.

In the rejection asserts that it would be obvious to use the coating composition of Chen et al. in the dielectric laminate of Knudsen et al. or the wiring board of Toyoshima et al. The rationale for this modification is that the composition of Chen et al. has "excellent flexibility, adhesion to a metal surface and low dielectric constant." However, Chen et al. make no mention of the dielectric properties of their coating composition.

There is no reason presented in the rejection why one of ordinary skill in the art would replace one or both of the polymer layers of the dielectric laminate Knudsen et al. with the coating composition of Chen et al. As noted, Chen et al. make no mention of the dielectric properties of their coating composition.

Similarly, no explanation is provided in the rejection as to why one of ordinary skill in the art would modify the wiring board of Toyoshima et al. so as to use the coating composition of Chen et al. The second insulating layer of Toyoshima et al. is one that is cross-linked and then "developed" so as to remove the uncross-linked regions. There is nothing in the rejection that

explains why such an insulating layer should be replaced by the coating composition of Chen et al.

Furthermore, the rejection presents no rationale as to why one of ordinary skill in the art would look to art dealing with the manufacture of fusing members in electrophotographic copying processes in order to modify the manufacture of dielectric materials for use in electronic components such as capacitors or to modify the manufacture of wiring boards. In addition, in view of the extremely large class of polymeric materials described by Knudsen et al., no rationale is presented in the rejection as to why one of ordinary skill in the art would go to a material outside of this vast genus, namely a polyurethane/polysiloxane copolymer, for selecting a material for use in the dielectric laminate, especially when the reference disclosing the polyurethane/polysiloxane makes no mention of its dielectric properties. Similarly, there is no suggestion in any of the prior art of using a polyurethane/polysiloxane copolymer for the insulating layer of Toyoshima et al.

The rejection also asserts that Chen et al. disclose the use of 1,4-butanediol. It is correct that 1,4-butanediol is listed in the Table as the short-chain diol of Examples 3 and 4. However, this diol is used in the manufacture of the polyurethane/polysiloxane block copolymer. It is not utilized as an agent capable of cross-linking with the melamine resin. As discussed above, it is the polyurethane/polysiloxane block copolymer (not a starting material thereof) that undergoes cross-linking with the melamine resin. Compare applicants' claims 29 and 40.

Finally, the assertion that the Chen et al. composition has the same dielectric properties as applicants' claimed composition is unfounded. As discussed above, applicants' composition is neither disclosed nor suggested by the disclosure of Chen et al.

In view of the above remarks, it is respectfully submitted that Toyoshima et al. and/or Knudsen et al., taken alone or in combination with Chen et al., fail to render obvious applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

Rejection under 35 USC 103(a) in view of Toyoshima et al. or Knudsen et al. in view of Chen et al. and Baranyk et al.

Claims 31-37 are rejected as allegedly being obvious in view of Toyoshima et al. (US 2001/0025414) or Knudsen et al. (US 2002/0176989) in combination with Chen et al. (US 5,330,840) and Baranyk et al. (US 2004/0044165). This rejection is also respectfully traversed.

The disclosures of Toyoshima et al., Knudsen et al., and Chen et al. are discussed above. Baranyk et al. is relied on in the rejection for disclosure of para-toluene sulphonic acid as a catalyst, butanol and ketones as solvents, and polyoxyethylene as a surfactant.

However, the disclosure of Baranyk et al. does not overcome the discrepancies discussed above with respect to the combination of Toyoshima et al. or Knudsen et al. with Chen et al.

Withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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